

**AMENDMENTS TO THE CLAIMS:**

1. (Currently amended) A band gap circuit for generating an output voltage to be outputted from a circuit output terminal, which is connected to a power supply voltage source and a reference potential point, said band gap circuit comprising:

a differential amplifier having an inverting input terminal, a noninverting input terminal, and an output terminal;

a first circuit for causing a potential difference to occur at said inverting input terminal and said noninverting input terminal in response to fluctuation of the voltage on said circuit output terminal, said first circuit including a first element having a capacitive component;

a switching element for causing excess current from said circuit output terminal to flow to said reference potential point in response to fluctuation of ~~the~~ potential at said output terminal of said differential amplifier, said switching element being connected to said circuit output terminal and said reference potential point and being directly connected to said output terminal of said differential amplifier; and

a ~~first-second~~ element having a resistive component, wherein: ~~and a second element having a capacitive component;~~

\_\_\_\_\_ said first and second elements ~~being~~ are connected to remove power supply noise in the power supply voltage source, and

~~wherein~~ ~~said second~~ first element comprises an ion implantation resistor.

2. (Canceled)

3. (Currently amended) The band gap circuit according to claim 1, wherein said ~~first~~ second element comprises a transistor.

4. (Canceled)

5. (Currently amended) A band gap circuit for generating an output voltage to be outputted from a circuit output terminal, which is connected to a power supply voltage source and a reference potential point, said band gap circuit comprising:

a differential amplifier having an inverting input terminal, a noninverting input terminal, and an output terminal;

a first circuit for causing a potential difference to occur at said inverting input terminal and said noninverting input terminal in response to fluctuation of the voltage on said circuit output terminal, said first circuit including a first element having a capacitive component;

a switching element for causing excess current from said circuit output terminal to flow to said reference potential point in response to fluctuation of the potential at said output terminal of said differential amplifier, said switching element being connected to said circuit output terminal, said reference potential point, and said output terminal of said differential amplifier, and

a ~~first-second~~ element having a resistive component, said ~~first-second~~ element being connected to said power supply voltage source and said circuit output ~~terminal;~~ and terminal, wherein:

~~a second element having a capacitive component,~~ said second element ~~being is~~  
connected to said first element, and

~~wherein said second~~ first element comprises an ion implantation resistor.

6. (Currently amended) The band gap circuit according to claim 5, wherein said ~~first~~  
second element comprises a transistor.
7. (Canceled)
8. (Previously presented) The band gap circuit according to claim 1, wherein said  
switching element comprises a N-channel MOS transistor.
9. (Previously presented) The band gap circuit according to claim 5, wherein said  
switching element comprises a N-channel MOS transistor.
10. (Currently amended) A band gap circuit, comprising:
  - a voltage supply circuit adapted to be connected to a power supply voltage source;
  - a reference potential point;
  - a circuit output terminal connected to said voltage supply circuit;
  - a differential amplifier connected to said voltage supply circuit and having an  
inverting input terminal, a noninverting input terminal, and an output terminal;
  - a first circuit for causing a potential difference to occur at said inverting input terminal

Serial No. 10/647,468  
Docket No.: 2002-249352US  
UDA.022

and said noninverting input terminal in response to fluctuation of the voltage on said circuit output terminal; and

a switching element for causing excess current from said circuit output terminal to flow to said reference potential point in response to fluctuation of ~~the~~ potential at said output terminal of said differential amplifier, said switching element being connected to said circuit output terminal, said reference potential point, and said output terminal of said differential amplifier, wherein:

~~wherein~~ said voltage supply circuit comprises a constant current source, a first transistor coupling said differential amplifier to the power supply voltage source and said constant current source, and a second transistor coupling said circuit output terminal to the power supply voltage source and said constant current source,

said first circuit includes a first element having a resistive component,

said band gap circuit further comprises a second element having a capacitive component, and

said second element comprises an ion implantation resistor.

11. (Canceled)

12. (Currently amended) A band gap circuit comprising;

a voltage supply circuit adapted to be connected to a power supply voltage source;

a reference potential point;

a circuit output terminal connected to said voltage supply circuit;

a differential amplifier connected to said voltage supply circuit and having an inverting input terminal, a noninverting input terminal, and an output terminal;

a first circuit for causing a potential difference to occur at said inverting input terminal and said noninverting input terminal in response to fluctuation of the voltage on said circuit output terminal; and

a switching element for causing excess current from said circuit output terminal to flow to said reference potential point in response to fluctuation of the potential at said output terminal of said differential amplifier, said switching element being connected to said circuit output terminal, said reference potential point, and said output terminal of said differential amplifier, wherein:

~~wherein~~ said voltage supply circuit comprises a constant current source, a first pair of cascaded transistors coupling said differential amplifier to the power supply voltage source and said constant current source, and a second pair of cascaded transistors coupling said circuit output terminal to the power supply voltage source and said constant current source,

said first circuit includes a first element having a resistive component,

said band gap circuit further comprises a second element having a capacitive component, and

said second element comprises an ion implantation resistor.

13. (Currently amended) The band gap circuit according to claim 10, ~~further comprising a first element having a resistive component and a second element having a capacitive component, wherein~~ said first and second elements ~~being~~ are connected to remove power

supply noise in the power supply voltage source.

14. (Currently amended) The band gap circuit according to claim ~~13~~ 10, wherein said first element comprises a transistor.

15. (Canceled)

16. (Previously presented) The band gap circuit according to claim 10, wherein said switching element comprises a N-channel MOS transistor.

17. (Currently amended) A band gap circuit, comprising:  
a voltage supply circuit adapted to be connected to a power supply voltage source;  
a reference potential point;  
a circuit output terminal connected to said voltage supply circuit;  
a differential amplifier connected to said voltage supply circuit and having an inverting input terminal, a noninverting input terminal, and an output terminal;  
a first circuit for causing a potential difference to occur at said inverting input terminal and said noninverting input terminal in response to fluctuation of the voltage on said circuit output terminal, said first circuit including a first element having a capacitive component;  
a switching element for causing excess current from said circuit output terminal to flow to said reference potential point in response to fluctuation of ~~the~~ potential at said output terminal of said differential amplifier, said switching element being connected to said circuit

Serial No. 10/647,468  
Docket No.: 2002-249352US  
UDA.022

output terminal, said reference potential point, and said output terminal of said differential amplifier, amplifier; and

a ~~first~~ second element having a resistive component, said ~~first~~ second element being connected to said power supply voltage source and said circuit output ~~terminal~~; and terminal,  
wherein:

~~a second element having a capacitive component~~, said second element ~~being~~ is connected to said first element,

~~wherein~~ said voltage supply circuit comprises a constant current source, a first transistor coupling said differential amplifier to the power supply voltage source and said constant current source, and a second transistor coupling said circuit output terminal to the power supply voltage source and said constant current source,

said first element comprises an ion implantation resistor.

18. (Canceled)

19. (Currently amended) A band gap circuit comprising:

a voltage supply circuit adapted to be connected to a power supply voltage source;

a reference potential point;

a circuit output terminal connected to said voltage supply circuit;

a differential amplifier connected to said voltage supply circuit and having an

inverting input terminal, a noninverting input terminal, and an output terminal;

a first circuit for causing a potential difference to occur at said inverting input terminal

and said noninverting input terminal in response to fluctuation of the voltage on said circuit output terminal;

a switching element for causing excess current from said circuit output terminal to flow to said reference potential point in response to fluctuation of the potential at said output terminal of said differential amplifier, said switching element being connected to said circuit output terminal, said reference potential point, and said output terminal of said differential amplifier,

a first element having a resistive component, said first element being connected to said power supply voltage source and said circuit output terminal; and

a second element having a capacitive component, said second element being connected to said first element, wherein:

~~wherein~~ said voltage supply circuit comprises a constant current source, a first pair of cascaded transistors coupling said differential amplifier to the power supply voltage source and said constant current source, and a second pair of cascaded transistors coupling said circuit output terminal to the power supply voltage source and said constant current source, and

said second element comprises an ion implantation resistor.

20. (Currently amended) The band gap circuit according to claim 17, wherein said ~~first~~ second element comprises a transistor.

21. (Canceled)



22. (Previously presented) The band gap circuit according to claim 17, wherein said switching element comprises a N-channel MOS transistor.

23. (Currently amended) The band gap circuit according to claim 12, ~~further comprising a first element having a resistive component and a second element having a capacitive component, wherein said first and second elements being~~are connected to remove power supply noise in the power supply voltage source.

24. (Currently amended) The band gap circuit according to claim ~~23~~12, wherein said first element comprises a transistor.

25. (Canceled)

26. (Previously presented) The band gap circuit according to claim 12, wherein said switching element comprises a N-channel MOS transistor.

27. (Previously presented) The band gap circuit according to claim 19, wherein said first element comprises a transistor.

28. (Canceled)

Serial No. 10/647,468  
Docket No.: 2002-249352US  
UDA.022

29. (Previously presented) The band gap circuit according to claim 19, wherein said switching element comprises a N-channel MOS transistor.